TiMREX (Taiwan Island Monsoon Rainfall Experiment)

Also known as SoWMEX (Southwesterly Monsoon Experiment)

Project Directors:

Ben Jou (National Taiwan University)

Wen Chau Lee (NCAR)

Collaborators:

Central Weather Bureau (Taiwan)

National Science and Technology Center for Disaster Reduction

Chinese Culture University

University of Hawaii

Colorado State University

University of Washington

University of Utah

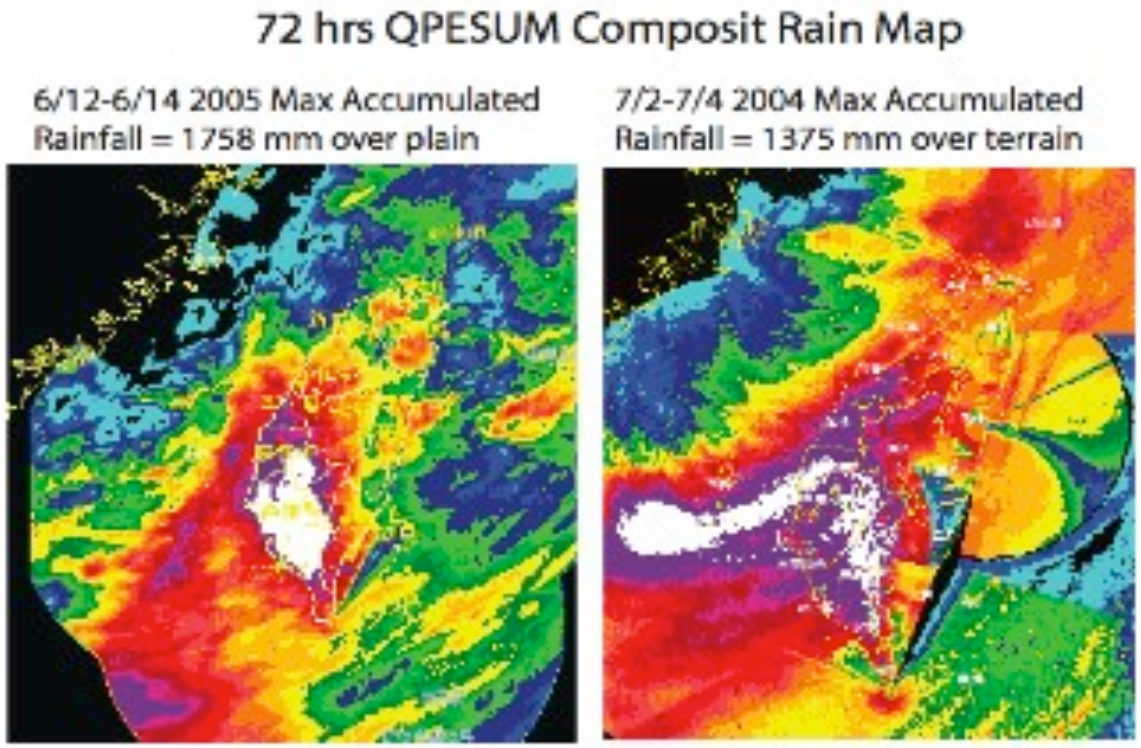
Scientific Objectives for TiMREX

• Investigate physical processes associated with heavy rain producing MCSs in southern Taiwan associated with interactions among Mei-Yu front, orography, and mesoscale circulations

• Advance the 0-36 hour QPE/QPF skill in complex terrain. Sounding (upsonde and dropsonde) observations will be used in conjunction with WRF modeling studies to improve understanding of key physical processes in heavy rain producing convective systems and further advance the QPE/QPF capabilities in numerical models.

The overarching goal is to advance the ability to forecast heavy rain producing convective systems, and their accompanied quantitative precipitation forecast/estimate (QPF/QPE).

Examples of Heavy Rain During Mei-Yu Season



From TiMREX Science Overview Document

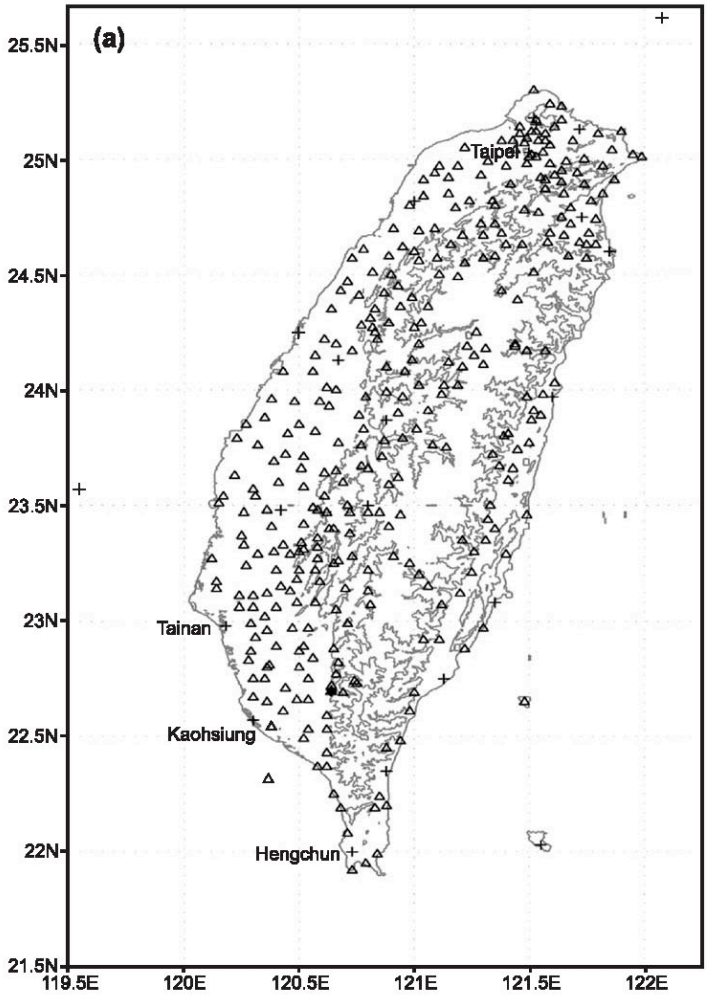
Experiment Overview

- Duration from approximately 15 May - 30 June 2008
- Combination of enhanced and existing ground instrumentation and soundings operational support as well as 1 aircraft and at least 1 ship
- For Soundings:

  - 42 day **SOP** (15 May - 25 June)
  - During SOP, 10 stations around Taiwan, surrounding islands, and ship will launch 4x/day
  - 14 days of **IOP**s (either consecutive or split up) - 5 stations can launch 8X/day
  - 7 day consecutive **EOP** between 28 May - 15 June (all 10 stations launch 8X/day)

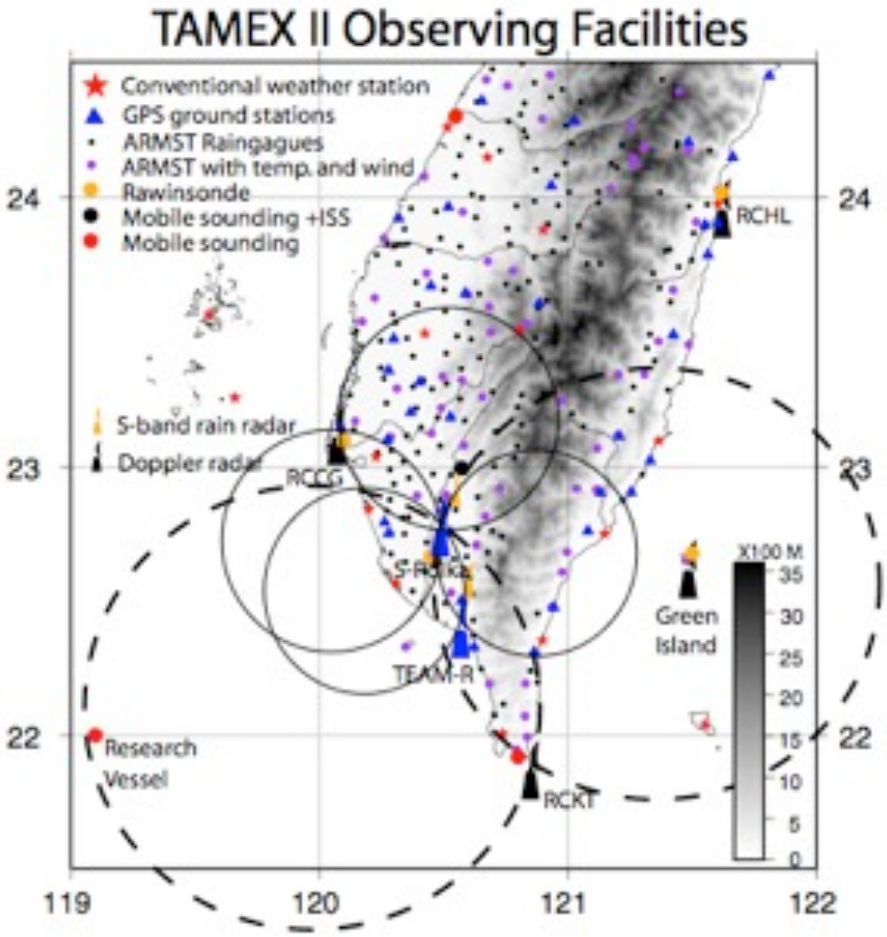
- 1 aircraft with 50 flight hours (~15 missions): can launch 200 dropsondes

Rain Gauge Distribution in Taiwan



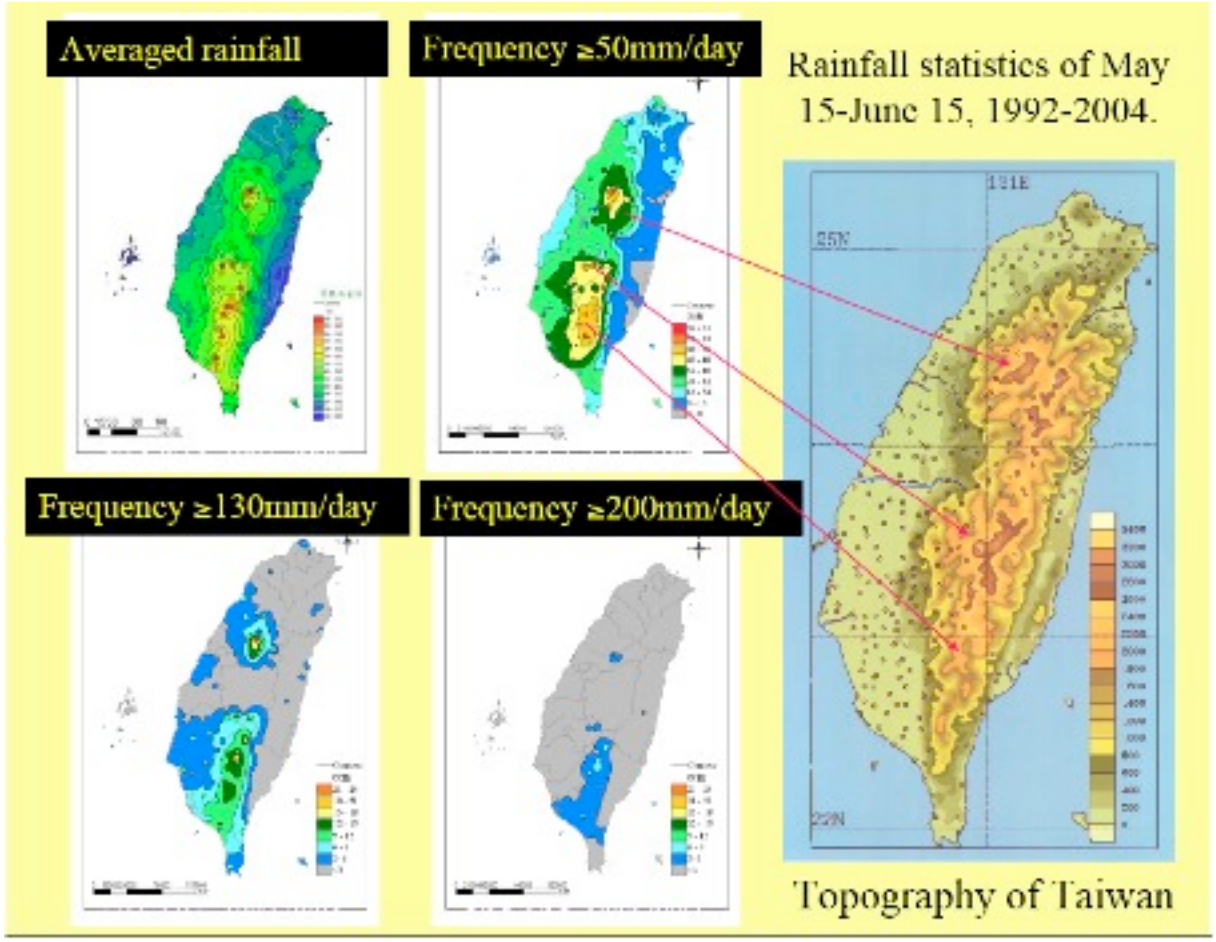
From Chen et al. 1995

TiMREX Ground Instrumentation



From TiMREX Science Overview Document

Rainfall Frequency Over Taiwan

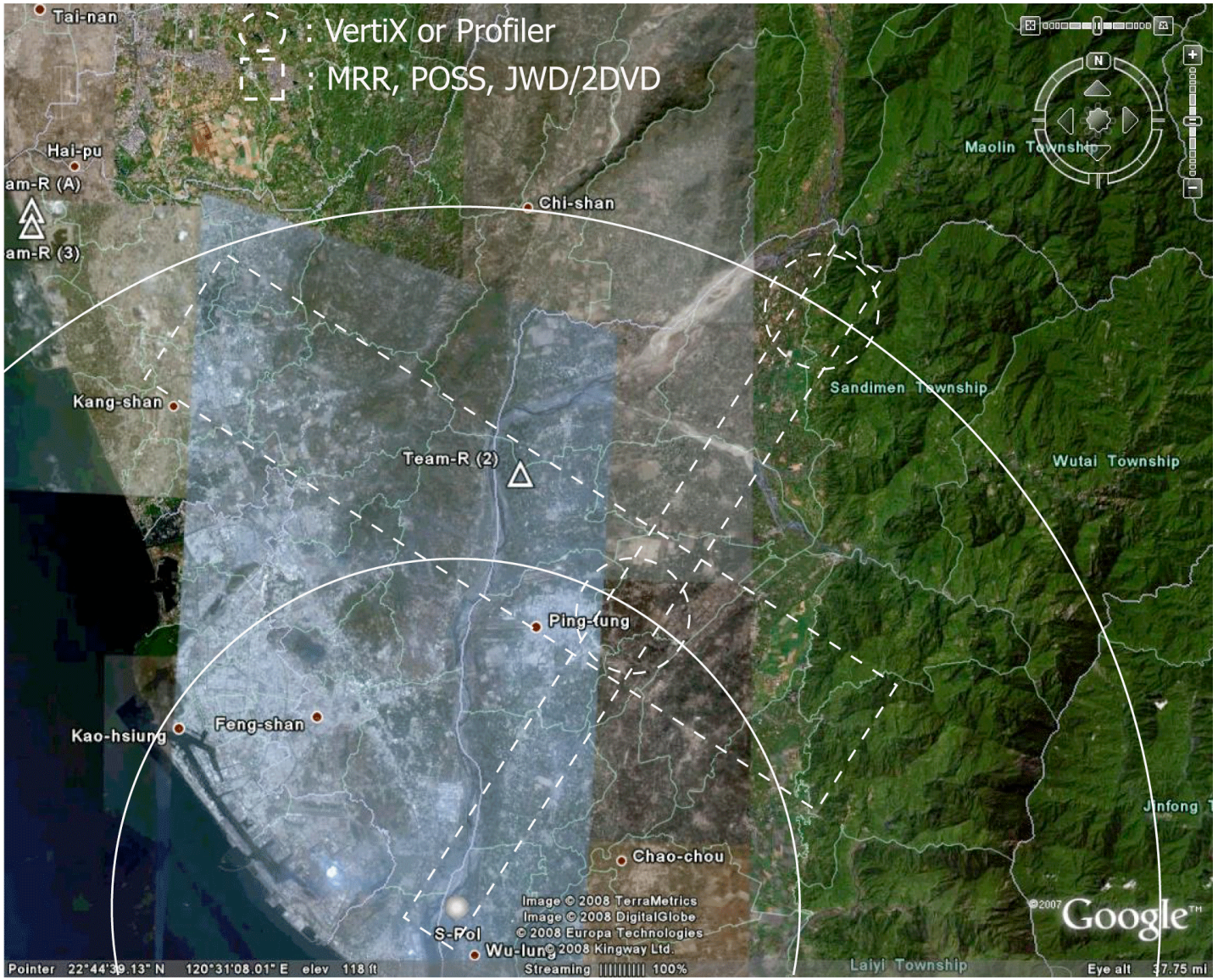


From TiMREX Science Overview Document

TiMREX Ground Instrumentation

- S-Pol
- TEAM-R scanning mobile X-band (dual polarimetric)
- Vertically pointing X-band radar (VertiX)
- Scanning X-band radars?
- 5 microwave rain radars (5)
- POSS bistatic systems (8)
- JWD (8) and 2DVD (1) disdrometers
- ISS UHF profiler (1)

Proposed Location of ISS and VertiX



20 km 40 km

Image courtesy of GyuWon Lee (NCAR)